Information Systems Program Activities

These reported current activities of NASA's Office of Space Science Information Systems Program reflect the combined efforts of many people.

Data Archiving and Management

Space Science Data Operation Office (SSDOO)
<http://www.gsfc.nasa.gov/c630/>

Space Physics Data Center (SPDC)

- The fields and information in the Space Physics Data Availability Catalog have been extended to accommodate additional NASA requirements. New options to generate printable summaries both for all investigations of a given mission and by investigation were added.

Astrophysics Data Center (ADC)

- To date the ADC has distributed over 15000 datasets on computer networks, tape, CD-ROM, microfiche, and microfilm to more than 3600 individual requesters.

National Space Science Data Center (NSSDC)

- Approximately 60 2GB platters of Dynamics Explore and International Sun-Earth Explorer data currently stored on Optimem 12S write-once-read-many optical disks is being copied to digital linear tape (DLT). A new Web-based interface is available for quick access to the spacecraft, experiment, and data set information contained in the NSSDC Master Catalog.

Planetary Data System (PDS)
<http://pds.jpl.nasa.gov/pds_home.html>

Imaging Node

- Actively working to complete the preparation for support during landed operations beginning July 4. Nearing completion on the definition of PDS labels and archive product formats for the IMP, APXS, ASI-MET, and Rover Cameras, and have delivered a World Wide Web (WWW)-based query tool to support access to acquired data. All developments will be used by project personnel during operations and then transitioned to post-mission use by the community at large.

Planetary Photojournal

- Have reached an agreement with Mars Pathfinder Project to post released images on the Photojournal in parallel with release to the media.

Information Systems Research and Technology

Applied Information Systems Research (AISR) Program
<http://www.hq.nasa.gov/office/oss/aisr/>

- Ongoing research programs. See the Grants Directory Index on the AISRP WWW homepage for a listing of funded research awards.

Jet Propulsion Laboratory (JPL)/ Information System
<http://www-ias.jpl.nasa.gov/Amy/overview.html>

Mission Simulation and Planning

- The Simulator for Imager for Mars Pathfinder (SIMP) has been requested for the MARS'98 missions. The SIMP scene visualization capability is being extended as proposed support for the Stardust Discovery and Pluto Express missions.
- Completed the IMP Panorama Generator, an observation sequence modeling tool, and will continue to provide sequence gneration support for the IMP camera.
- Completed the Flight System Testbed (FST) Scene Generator, a visualization software to generate the images used to test flight software and hardware in the FST.

Science Visualization

- Created images for *Science* and *Nature* magazine covers.
- Integrating the Science Visualization Testbed into the end-to-end testbed in collaboration with the New Millennium Program, Space Interferometry Mission, FST, and Multimission Ground Support Office.

Science Data Analysis

- Expanding the Data Object to enable scaling, warping, and boolean operations.
- Performing renormalizing of data at the input to LinkWinds to support intercomparisons.
- Developing interfaces for data that is not regularly gridded.

Mission Data Archival and Dissemination

- The *Data Distribution Lab* is developing the Telecommunications Mission Operations Directorate Multimedia System.
- The *Navigation Ancillary Informaion Facility (NAIF)* has completed implementations of the Experimenter's Notebook component of the SPICE Events Kernel.
- *NAIF*'s Moving Object Support System was selected for use on SIRTF.
- The *Science Digital Data Preservation Task (SSDPT)* has preserved 25,951 tapes as of 2/97.
- The *SSDPT* processing was featured in a documentary film sponsored by the American Film Foundataion.
- The *SSDPT* assisted the Lunar and Planetary Institute with the preservation of Mariner 6/7 IRS data.

Parallel Visualization Technology

- Continuing the establishment of JMAX, a von Karman-based project on the Power Wall for new science presentation and public outreach.

Advanced Computing

Space Science Grand Challenges
<http://sdcd.gsfc.nasa.gov/ESS/grand-challenges.html>

- Ongoing research with Science Teams I and II.

High Performance Computing and Communications (HPCC)
<http://www.aero.hq.nasa.gov/hpcc/>

Earth and Space Data Computing Division (ESDCD) - Goddard Space Flight Center (GSFC)

- *The Science Computing Branch/NASA Center for Computational Sciences (NCCS)* UniTree traffic exceeded 1 terabyte (TB)/week. This milestone was achieved three times this year for the weeks of January 19, February 23, and March 2.
- The *NCCS* added Quad-SCSI disks to the UniTree system, increasing disk cache size from 155 gigabytes to 375 giga-bytes, allowing copies of files to stay on disk 2.4 times longer.
- *NCCS* replaced 20 Cray J90 CPUs with 32 J90se CPUs in the J90 system known as "charney", providing users with an up to 50 percent increase in speed of scalar codes.
- Two STK "Timberline" tape drives with integrated controllers were installed in the *NCCS* STK "Wolfcreek" silo, enhancing the performance of the SGI/Cray DMF mass storage subsystem by increasing the peak transfer rate from 36 MBs/sec to 48 MBs/sec.
- In *HPCC/Earth and Space Sciences (ESS)*, SGI/Cray installed a 256-processor Cray T3E with 32 GB of memory and 480 GB of disk in support of the ESS Grand Challenge applications. Based on the Netlib LinPak benchmark of 11/96 list of the world's most powerful computing systems, this system ranks fifth in the US and 11th in the world.
- *HPCC/ESS* installed a Storage Tek Powder-horn silo with four Redwood and eight Timberline drives and connected directly to the T3E to support data storage requirements of the ESS Grand Challenge teams.
- At *HPCC/ESS* all nine ESS Investigator teams achieved at least 10 gigaflops sustained performance on one or more key science codes using the T3D.
- The *Science Communication Technology Branch (SCTB)* was invited to host a NASA node in the Defense Advanced Research Projects Agency-initiated, n x 10 Gbps Multiwavelength Optical Network (MONET) testbed. MONET will be a high performance network segment of the Department of Defense's Next Generation Internet initiative that will be integrated into Advanced Technology Demonstration infrastructure.
- At *SCTB* Bill Fink achieved a new network throughput high water mark of 310 Mbps over the local high speed asynchronous transfer mode network

using the 622 Mbps network interface card in Sun UltraSPARC.

- At the *Applied Information Sciences Branch* four original beta-test prototype Regional Validation Centers (RVC) are operational, as RVC hardware and software were successfully installed and tested at the University of Hawaii and Clemson University. The other two RVCs are located at the University of Maryland-Baltimore and the University of Southwestern Louisiana.
- At the *Center of Excellence in Space Data and Information Sciences (CESDIS)* the HPCC Beowulf project has been delivering HPCC/ESS high speed network device driving software, over the past three years, for the Linux operating system to a large customer commmunity through commercial distribution by the RedHat Software publishing company. Now RedHat is test releasing the current version of the Beowulf cluster configuration and Linux tools that allow this community to easily construct Beowulf clusters.

HPCC/ESS-JPL

- See ongoing research at <http://olumpic.jpl.nasa.gov/>

National Coordination Offfice (NCO) for Computing, Information, and Communication

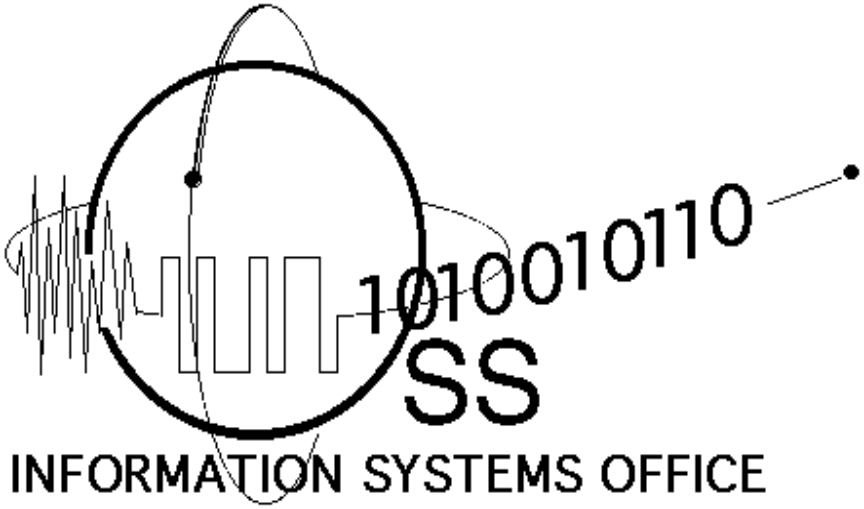
- See the "Whats New" NCO homepage <http://www.hpcc.gov/whats-new/index.html> for the newest links on the NCO Web Server.

Science Networking

NASA Internet (NI)
<http://nic.nasa.gov/ni/>

NASA Research and Education Network (NREN)

- Developed an interoperable architectural model with the Department of Energy and Lawrence Berkeley Laboratory for the establishment of research networking exchanges on the west and east coasts.
- Continued working with the NASA Integrated Services Network on a memorandum of understanding to provide bandwidth sharing across the Sprint ATM wide-area network service.
- Initiated development of 1996 performance measurements baseline from raw NI data.
- Began working on implementing three mission applications across NREN: Mars Pathfinder, NOMAD, and the Virtual Simulation Laboratory (VLAB). Johnson Space Center was established as an NREN demonstration node for the VLAB at DS-3 speed (45 Mbps) .
- Began work on implementing two NREN applications from Lewis Research Center: echocardiography and collaborative simulation.
- Selected four NREN applications for submission as potential collaborative appplications for the NGI.



<http://www.hq.nasa.gov/office/oss/sthome.htm>